

WHAT IS CLAIMED IS:

1. An automotive alternator comprising:

an inboard bracket formed in a bowl shape having a cylindrical inboard bearing box in a central portion of an end surface, and an outboard bracket formed in a bowl shape having a cylindrical outboard bearing box in a central portion of an end surface, said brackets being joined with open portions of said bowl shapes facing each other;

a shaft rotatably supported in said inboard and outboard brackets by means of inboard and outboard bearings disposed inside said inboard and outboard bearing boxes;

a pulley fixed to an inboard end portion of said shaft;

a stator disposed such that first and second ends thereof are supported in said inboard and outboard brackets;

a rotor fixed to said shaft, said rotor being disposed radially inside said stator;

a rectifier disposed in said outboard bracket on an outer circumferential side of said outboard bearing box; and

a heat exchange portion for dissipating heat generated in said rectifier,

wherein said outboard bearing is constituted by a multi-row bearing having one inner ring and one outer ring, a plurality of ball tracks disposed axially between said inner ring and said outer ring, and a plurality of balls disposed in each of said ball tracks.

2. The automotive alternator according to Claim 1, further comprising slip rings for supplying a field current to a field winding in said rotor disposed at an outboard end of said shaft, wherein a diameter of said multi-row bearing and a diameter of said slip rings are constructed so as to be substantially equal.

3. The automotive alternator according to Claim 1 wherein said shaft is supported in said multi-row bearing such that an outboard end surface of said shaft is positioned between an outboard end surface of said multi-row bearing and a center line of an outermost ball track at said outboard end.

4. The automotive alternator according to Claim 1, further comprising a creep-preventing member disposed on an outer circumferential surface of said outer ring of said multi-row bearing facing said ball tracks.

5. The automotive alternator according to Claim 4 wherein:

said multi-row bearing has two ball tracks; and

said creep-preventing member is formed into ring-shaped bodies having a width which is less than or equal to a diameter of said balls disposed in said ball tracks, said ring-shaped bodies being disposed on an outer circumferential surface of said outer ring facing each of said ball tracks such that width-direction center lines of said ring-shaped bodies are offset towards end surfaces of said multi-row bearing relative to center lines of said ball tracks.

6. The automotive alternator according to Claim 4 wherein:

said outboard bracket is made of a metal; and

said creep-preventing member is made of a resin.

7. The automotive alternator according to Claim 1 wherein a heat dissipation means is disposed in said outboard bracket.

8. An automotive alternator comprising:

an inboard bracket formed in a bowl shape having a cylindrical inboard bearing box in a central portion of an end surface, and an outboard bracket formed in a bowl shape having a cylindrical outboard bearing box in a central portion of an end surface, said brackets being joined with open portions of said bowl shapes facing each other;

a shaft rotatably supported in said inboard and outboard brackets by means of inboard and outboard bearings disposed inside said inboard and outboard bearing boxes;

a pulley fixed to an inboard end portion of said shaft;

a stator disposed such that first and second ends thereof are supported in said inboard and outboard brackets;

a rotor fixed to said shaft, said rotor being disposed radially inside said stator;

a rectifier disposed in said outboard bracket on an outer circumferential side of said outboard bearing box; and

a ventilation aperture bored through said outboard bracket on an outer circumferential side of said outboard bearing box,

said automotive alternator being constructed such that said rectifier is cooled by allowing air to flow through said ventilation aperture,

wherein said outboard bearing is constituted by a multi-row bearing having one inner ring and one outer ring, a plurality of ball tracks disposed axially between said inner ring and said outer ring, and a plurality of balls disposed in each of said ball tracks.

9. The automotive alternator according to Claim 8 wherein:

said rectifier is constructed in an arc shape having a central angle of 180 degrees or more and is disposed on a common axis with said outboard bearing so as to overlap said outboard bearing in a radial direction; and

said ventilation aperture is bored through said outboard bracket so as to open in an arc shape for half a circumference or more in a circumferential direction facing said rectifier.

10. The automotive alternator according to Claim 8, further comprising slip rings for supplying a field current to a field winding in said rotor disposed at an outboard end of said shaft, wherein a diameter of said multi-row bearing and a diameter of said slip rings are constructed so as to be substantially equal.

11. The automotive alternator according to Claim 8 wherein said shaft is supported in said multi-row bearing such that an outboard end surface of said shaft is positioned between an outboard end surface of said multi-row bearing and a center line of an outermost ball track at said outboard end.

12. The automotive alternator according to Claim 8, further comprising a creep-preventing member disposed on an outer circumferential surface of said outer ring of said multi-row bearing facing said ball tracks.

13. The automotive alternator according to Claim 12 wherein:

said multi-row bearing has two ball tracks; and

said creep-preventing member is formed into ring-shaped bodies having a width which is less than or equal to a diameter of said balls disposed in said ball tracks, said ring-shaped bodies being disposed on an outer circumferential surface of said outer ring facing each of said ball tracks such that width-direction center lines of said ring-shaped bodies are offset towards end surfaces of said multi-row bearing relative to center lines of said ball tracks.

14. The automotive alternator according to Claim 12 wherein:

said outboard bracket is made of a metal; and

said creep-preventing member is made of a resin.

15. The automotive alternator according to Claim 8 wherein a heat dissipation means is disposed in said outboard bracket.

2025 RELEASE UNDER E.O. 14176